

### **REMARKS/ARGUMENTS**

The office action of April 5, 2007 raises essentially three issues. First, the office action requests corrected drawing sheets under 37 CFR §1.83(a). Second, the office action alleges that several of the claims are indefinite or otherwise improper under 35 USC §112. Third, the office action posits that all pending claims are unpatentable over the Schutzer reference (US 5,920,848) in view of the Pollock reference (US 5,706,406).

#### **Response to Office Communication**

As a preliminary matter, the first paragraph of the office action discusses the examiner's reaction to the Response to Office Communication filed by the applicants on January 2, 2007. While receipt of the document is acknowledged, the examiner's reaction, if any, to the document is not provided. Specifically, the office action states: "After consideration of the Applicants comments, the Examiner". The applicants respectfully request acceptance of the applicants' position as discussed in the Response to Office Communication and a written description of such acceptance.

#### **Drawing Figures**

The office action describes 37 CFR 1.83(a) as requiring the drawings to show every feature of the invention specified in the claims. However, drawings are only required "where necessary for the understanding of the subject matter sought to be patented." See 35 U.S.C. § 113 and 37 CFR 1.81. To be coherent, these two requirements must be read in unison and accordingly, only if the specification insufficiently describes features of the invention are such features to be included within the drawing figures. This is substantially distinguishable from a broad requirement that the applicant must illustrate each and every claim limitation, regardless of the description of that limitation in the specification. As such, to the extent that the specification adequately explains the invention without the need for illustration, drawings are not required at all, let alone as proposed in the office action. The applicant respectfully submits that all

limitations for which drawings are requested are adequately described in the specification and therefore the requirement for illustration of these limitations is improper. If the requirement is maintained in the next action, the applicants respectfully request analysis of claim limitations that are alleged to be inadequately described in the specification to facilitate resolution of the issue.

Further, the requirements described in the office action appear to be already satisfied. For example, the office action requires a drawing showing the management system, a graphical user interface, and a distributing means, all of which are already depicted in the drawing. Specifically, a management system is shown in Figure 1 as element 125 labeled MANAGEMENT SYSTEM, a graphical user interface is shown in Figures 5-11, including a user interface “including an agent recommendation window” in Figure 9 (described on page 14 of the application in the Brief Description of the Drawings), and distribution means is shown by the lines and arrows in Figure 1 and described on page 39 (citing an exemplary “method of agent distribution is by public network”). Likewise, the steps of claim 31 are shown and described in Figure 1 and the other figures of the application and are described in the specification sufficiently for understanding the subject matter of claim 31. Thus, the applicant respectfully submits that all limitations for which drawings are requested are adequately described in the specification and shown in the existing drawing, and therefore the requirement for additional drawing figures is improper.

### 35 USC 112

The office action alleges that claims 24-30, 46-61, and 67-76 are improper under 35 USC 112. The office action takes issue with optional language generally and with four phrases in particular: (1) “means for distributing artificial agents”; (2) “capable of”; (3) “if and when”; and (4) “if the expected future performance...” As to the phrase “means for...”, the applicants respectfully submit that this terminology is expressly permissible under 35 USC 112 paragraph 6, which states as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof .

[emphasis added]. In view of these provisions, use of the phrase “means ... for” is explicitly authorized by statute and the rejection is improper. More specifically, while the office action states that “[i]t is unclear ... the particular ‘means’ the applicant desires to ascribe the function...”, consistent with 35 USC 112 paragraph 6, no structure, material, or acts need be recited within the claim language when the “means for” construction is employed. Under the “means for...” construction, the means to be applied in the claims are definite and correspond to those means described in the specification with regard to the function at issue. If the rejection is to be maintained in the next action nevertheless, the applicants respectfully request analysis regarding why 35 USC 112 paragraph 6 is alleged to be inapplicable.

Regarding the phrases allegedly optional phrases “capable of”, “if and when ...”, and “if the expected performance...” the applicants respectfully submit that these issues are moot in view of the present amendments in the claims and the applicants respectfully request that the rejections be withdrawn as to these issues. The applicants note that the present amendments were not made for purposes of patentability but rather to comply with semantic formalities as raised by the examiner. The applicants respectfully submit that in view of the present amendments this rejection should be withdrawn.

#### Obviousness Rejections

The office action rejects claims 24-39, 46-61, and 67-76 as being obvious in view of U.S. Patent No. 5,920,848 to Schutzer et al. and U.S. Patent No. 5,706,406 to Pollock. Upon review, however, the references do not support the rejections, and the applicants respectfully traverse the rejections.

In light of the recent Supreme Court decision in *KSR v. Teleflex*, and the recent decisions by the Board of Patent Appeals and Interferences in *Ex Parte Smith*, *Ex Parte Kubin*, and *Ex Parte Catan*, any obviousness determination must be consistent with the traditional *Graham* factors. Thus, obviousness is determined according to (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the prior art and the claimed invention, and (4) the extent of any objective indicia of nonobviousness.

In addition, the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2142. In the present case, the office action fails to fulfill several of these criteria with respect to the various claims.

The cited references do not show all of the claimed elements and limitations.

The prior art references when combined still must teach or suggest all the claim limitations. MPEP 2143. Several express elements and limitations in the claims are absent from the Schutzer and Pollock references. For example, claim 1 calls for an agent factory that monitors recommendations provided by a first artificial agent. The office action asserts that the Schutzer reference discloses an agent factory that monitors financial recommendations. Even if this characterization were accurate, it would be inadequate. Claim 1 requires the agent factory to monitor recommendations provided by an agent, not simply monitoring “financial recommendations” as asserted by the office action. Consequently, even if the office action’s characterization were accurate, “an agent factory that monitors financial recommendations” is not the element recited in claim 1.

In addition, the cited portion of the Schutzer reference only indicates that the system monitors financial transactions through intelligent agents. The Schutzer reference does not disclose that any agent factory monitors recommendations provided by the agent, but instead the agents and the system monitor the financial information itself. Monitoring financial information and monitoring recommendations provided by an agent are not the same thing. Therefore, the cited references do not show all of the claimed elements and limitations as required to support the obviousness rejections.

Claim 1 also calls for a management system to determine whether the first artificial agent is performing below a predetermined predictability value and, if so, retiring the first artificial agent and making a second artificial agent available for distribution. The office action posits that the Schutzer reference discloses an “agent factory” which monitors financial recommendations. However, the cited portion of the Schutzer reference discloses no functionality akin to the agent factory of the applicants’ claimed invention. Whereas the agent factory in claim 1 comprises a management system that may generate and/or retire artificial agents, the “agents” in the Schutzer reference are not managed by a management system. Consequently, the office action’s allegation that the Schutzer reference discloses an “agent factory” as claimed is improper.

As another example, the office action alleges that “creating new agents is considered the ability of the artificial agent to ‘adapt’ and change its behavior in new way by supplying the agent(s) new information as suggested by Schutzer.” Such an interpretation of the claim, however, directly contradicts the language of the claim and the specification, and it is improper for the office action to assign a meaning to the claim contrary to the language of the claim and the specification. Claim 1 requires the management system to retire the first artificial agent and make a second agent available for distribution. Changing the operating parameters of an agent is not the same thing. Whereas the agents in the cited references apply a single operational sequence to a potentially changing set of input variables, they are not different agents as required by claim 1. “Adaptation” in both of the cited references may involve a fluctuating set of input and output data, but such data will in any event be evaluated according to a fixed operational

sequence. By contrast, different agents apply different operational sequences to evaluate such data.

The office action further claims that the Pollock reference discloses various elements and limitations absent from the Schutzer reference. In particular, the office action appears to assert that the Pollock reference discloses the required management system that may retire the first artificial agent and make a second agent available for distribution. The cited portion of the Pollock reference, however, describes a fixed operational sequence that may be configured to evaluate propositions based on changing inputs. In its broadest description, the “agent” described in the Pollock reference is a singular agent that operates according to a fixed operational sequence. The Pollock reference may generate updated output in response to updated inputs, but the system is limited to a fixed operational sequence regardless of the change input or output.

By contrast, the applicants’ claimed invention calls for creation and/or retirement of multiple artificial agents and a management system that “retir[es] the first artificial agent and mak[es] a second artificial agent available for distribution” in the event that “the first artificial agent ... perform[s] below the predetermined predictability value.” No suggestion regarding retirement or generation of multiple agents or predictability values can be found in the Pollock reference because in all events the system of the Pollock reference refers to a singular agent that operates according to a fixed operational sequence.

Additionally, the cited references individually or in combination do not disclose or suggest an agent factory for managing multiple agents by comparing a given agent’s performance a predictability value and replacing agents accordingly. The Pollock reference describes a system in which (at column 4, line 18) “when a goal is found, the corresponding instruction is to insert a new query into ultimate-epistemic-interests regarding the discovery of adoptable plans aimed at achieving that goal.” In other words, the Pollock reference is a single predictive model that alters its plans to achieve a goal, unlike the claimed system that retires and offers different agents for achieving a preferred result. No method for evaluation of an artificial

agent is disclosed or suggested in either reference and no such method can be achieved from their combination.

The rejections of the remaining independent claims are similarly deficient. For example, claim 31 expressly requires monitoring an expected future performance of the artificial agents that have been distributed and, in response to performance of at least one artificial agent below a predetermined predictability value, creating new artificial agents and distributing the new artificial agents. As noted above, the cited references fail to disclose monitoring an expected future performance of the artificial agents, and the office action does not identify any disclosure of this element in either of the cited references. In addition, as described above, the Schutzer and Pollock references fail to disclose creating new artificial agents and distributing the new artificial agents as required by the claims and defined in the specification.

Claim 46 requires artificial agents created based, respectively, at least in part on different technical analysis templates being applied to historical price time series information, and claim 54 calls for an artificial agent created based at least in part on a technical analysis template applied to historical price time series information. The cited references do not disclose any such artificial agents based in any way on different technical analysis templates being applied to historical price time series information, and the office action provides no grounds to support the rejection of claim 46. Claim 46 further requires a management system, in communication with real time market data, operable to (i) receive the artificial agents, (ii) display characteristic information with respect to each received artificial agent and (iii) inform a user of a specific recommendation made by at least one of the artificial agents. Claim 54 requires a management system, in communication with real time market data, operable to display characteristic information with respect to the artificial agent and inform a user of a specific recommendation made by the artificial agent. The office action does not identify the corresponding elements with the recited limitations in the cited references, and the references provide no such disclosure.

Claim 58 recites creating an artificial agent based at least in part on a technical analysis template applied to historical price time series information of a financial instrument. The cited references do not disclose any such artificial agent, and the office action fails to identify the

disclosure of any such agent in either cited reference. Claim 58 further requires determining an expected future performance of the artificial agent based on a trading strategy associated with the artificial agent, applying the trading strategy to the financial instrument, and retiring the artificial agent when the expected future performance falls below a predetermined threshold. None of these elements is disclosed in the references, and the office action provides no reasons for rejecting claim 58.

The rejections of the dependent claims are likewise unsupported. For example:

- Claim 26 calls for the artificial agents to monitor their expected future performance using a predictability value. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 27 requires the predictability value to be based on mutual-information-based reconstruction of a multivariate landscape. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 28 requires a price time series of a financial instrument to be used to generate the multivariate landscape. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claims 29 and 67 require a curriculum vitae to be associated with each artificial agent. The office action provides no grounds for rejecting these claims, and the references disclose no such limitation.
- Claim 30 requires distributing artificial agents to be effected in accordance with a leasing service agreement. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 33 requires the request to be one of a subscription and a leasing agreement. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.



- Claim 34 requires each artificial agent to provide a financial trading recommendation. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 35 requires each artificial agent to have a distinct trading strategy. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 38 requires the expected future performance of an artificial agent to be associated with a predictability of a decision making strategy. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claims 39 and 76 require an artificial agent to have a strategy that is designed by a user. The office action provides no grounds for rejecting these claims, and the references disclose no such limitation.
- Claim 49 requires an automated trade clearing system in communication with the management system. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 50 requires the specific recommendation to be one of buy, sell and hold. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 51 requires a price feedback indicator to be associated with each artificial agent. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 52 requires the price feedback indicator to be determined by querying the artificial agent as to how a recommendation would change in view of various price scenarios. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.

- Claim 53 requires the price feedback indicator to be represented by a symbol from the group consisting of +, -, >, < and n. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claims 56, 60, and 71 require the artificial agent to be self-monitoring. The office action provides no grounds for rejecting these claims, and the references disclose no such limitation.
- Claim 57 requires a price feedback indicator to be associated with the artificial agent. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 59 requires the expected future performance to be based on a predictability value. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 61 requires determining the artificial agent's price feedback indicator by:  
(a) presenting the agent with different hypotheses about the price of the financial instrument during a subsequent trading period; (b) determining the artificial agent's recommendation for each of the different hypotheses; and (c) analyzing the resulting recommendations. The office action provides no grounds for rejecting this claim, and the references disclose no such limitations.
- Claim 68 requires the predictability value to change in view of real time market data. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 69 requires the predictability value to be based on mutual-information-based reconstruction of a multivariate landscape. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 70 requires a price series of a financial instrument to be used to generate the multivariate landscape. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.

- Claim 72 requires the artificial agents to monitor their expected future performance using a predictability value. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 73 requires the artificial agents to retire when their predictability falls below a predetermined threshold. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 74 requires retired agents to be replaced by new agents from an agent factory. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.
- Claim 75 requires each artificial agent to be pre-trained with a predetermined decision making strategy. The office action provides no grounds for rejecting this claim, and the references disclose no such limitation.

In sum, the office action fails to identify several express elements and limitations of the claims in the Schutzer and Pollock references. To support the rejections, the prior art references when combined still must teach or suggest all the claim limitations. Consequently, the rejections of the claims are improper and should be withdrawn.

No reason to combine the references to arrive at the claimed invention

It is inappropriate to reject claims based on obviousness without an objective reason to combine the teachings of the references. “[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” KSR, slip op. at 14. Further, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” KSR at 14. It is important for the office action “to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” KSR at

15. An examiner must present a “convincing line of reasoning supporting a rejection.” MPEP 2144.

In the present case, the office action fails to provide the required articulated reasoning with a rational underpinning. The office action asserts that the claimed invention would be obvious

because the artificial agent would be provided with information that would make it ‘behave’ within predetermined levels or within required rules or criteria. Thus to create a new artificial agent would essential be to impart to it different or updated data when it failed to provide an expected outcome... Thus creating new agents is considered the ability of the artificial agent to ‘adapt’ and change its behavior in new way by supplying the agent(s) new information as suggested by Schutzer...

As discussed above, the office action improperly equates modifying the parameters of an agent with creating a new agent. The remainder of the proposition is incomprehensible and offers no reason to combine the references. In any event, the quoted portion of the office action does not examine the applicants’ claimed invention in view of the cited references. The applicant respectfully submits that the office action thus fails to provide the requisite “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”, and the rejections should be withdrawn.

#### No Reasonable Expectation of Success

The office action must describe a reasonable expectation of success in modifying or combining the cited references to achieve the claimed invention. The level of predictability need not be absolute, but a showing of at least some degree of predictability is required. MPEP 2143.02. The office action does not address this element of the *prima facie* case. To the extent the office action addresses the combination of the Schutzer and Pollock references, it does not describe whether such a combination would provide a viable artificial agent. Since this element is unaddressed, the rejections are improper and should be withdrawn.

Improper hindsight


The applicants submit that, in view of the shortcomings of the cited references, the conclusions of the office action can only be reached through the impermissible use of hindsight. The claimed invention is not simply a “predictable use of prior art elements according to their established functions,” and the office action provides no objective reason to combine their respective teachings to arrive at the claimed invention. “A factfinder should be aware ... of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” KSR at 17.

In the present case, the office action relies on the applicant’s disclosure and/or hindsight to support the obviousness rejection. This is clearly inappropriate, as “the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant’s disclosure.” MPEP 2143. Because the office action cannot support the rejections without relying on the applicant’s disclosure and/or hindsight, the rejections are improper and should be withdrawn.

**CONCLUSION**

In summary, the applicants respectfully submit that all claims are distinguishable over the prior art and are in condition for allowance. If there are any questions or concerns, please contact the undersigned at the telephone number indicated below.

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Daniel J. Noblitt (Reg. No. 35,969)

Noblitt & Gilmore, LLC  
4800 North Scottsdale Road  
Suite 6000  
Scottsdale, Arizona 85251  
Telephone: 480.994.9859  
Facsimile: 480.994.9025